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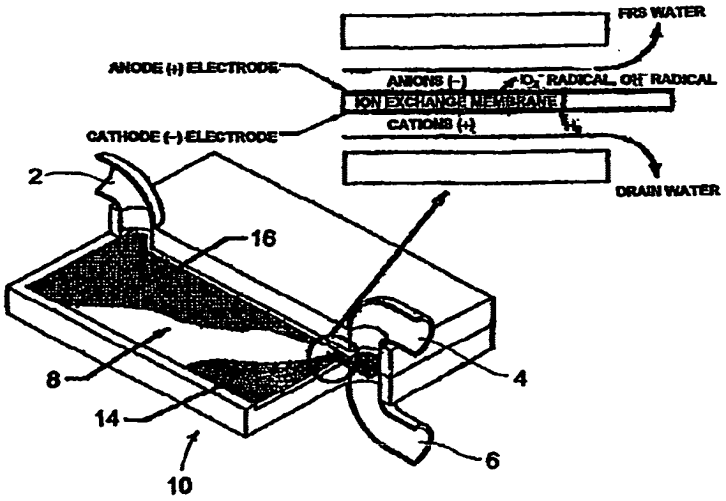
(54) Title: HIGH ELECTRIC FIELD ELECTROLYSIS CELL



(57) Abstract: A High Electric Field Electrolysis (HEFE) cell is provided for electrolyzing water to transform it into Free Radical Solution (FRS) water for cleaning, deodorizing, and sterilizing. The HEFE cell is comprised of a pair of flat electrodes attached (or coated) onto a flat proton ion exchange membrane enclosed in a corresponding structure that accommodates the electrodes and the proton ion exchange membrane. The structure is comprised of at least one inlet channel for receiving purified water and two outlet channels for output of electrolyzed FRS water and hydrogen rich water. The HEFE cell further provides a mechanism for recycling of hydrogen rich water for re-use or electric power generation. The quantity and the quality of FRS water production is controlled with an external control circuit that automatically monitors and maintains appropriate parameter values for the production of FRS water.

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